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ABSTRACT

This study reports the results of a state-wide (Connecticut) teacher stress survey conducted with 58 low-stress, 250 moderate-stress, and 57 high-stress special education teachers (total N = 365). Dependent variable ratings for the degree of intensity (How strong?) and the degree of frequency (How often?) of 38 emotional, behavioral, and physiological manifestations of job-related teacher stress are reported. Results include: 1) the relative frequencies and means of the most frequently and strongest occurring of 38 emotional, behavioral, and physiological manifestations, and 2) statistically significant differences among high-, moderate-, and low-stress teacher groups for the 38 stress manifestations. Tables provide a statistical analysis of the results. (Author/DB)

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CORRELATES OF OCCUPATIONAL STRESS

AS REPORTED BY FULL TIME

SPECIAL EDUCATION TEACHERS:

II. MANIFESTATIONS OF STRESS

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Running Head: Teacher Stress Manifestations

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This study reports the results of a state-wide teacher stress survey conducted with 58 low-stress, 250 moderate-stress, and 57 high-stress teachers (total N = 365). Dependent variable ratings for the degree of intensity (How Strong?) and the degree of frequency (How Often?) of 38 emotional, behavioral, and physiological manifestations of job-related teacher stress are reported. Results include: (a) the relative frequencies and means of the most frequently and strongest occurring of 38 emotional, behavioral, and physiological manifestations, as reported by 365 full time special education teachers, and (b) statistically significant differences among high-, moderate-, and low-stress teacher groups for the 38 stress manifestations.

CORRELATES OF OCCUPATIONAL STRESS

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SPECIAL EDUCATION TEACHERS:

II. MANIFESTATIONS OF STRESS

There is presently a growing nationwide interest among special education teachers about the status of their on-the-job mental health. During the late 1970s and early 1980s, for example, the phenomenon of teacher stress was amply documented from perspectives that are both data-based (Anderson, 1980; Cichon and Koff, 1980; Coates and Thoreson, 1976; Fimian, 1981; Fimian and Santoro, 1981; Kyriacou and Sutcliffe, 1978; and Maslach and Jackson, 1979) and non-data-based (Block, 1978; Fimian, 1980; Instructor, 1979; and Styles and Cavanagh, 1977). The focus of most of these writings has been, and continues to be, upon the sources and manifestations of job-related stress related to teaching in general and teaching handicapped students in particular.

The sources of teacher stress are numerous, and have been addressed elsewhere (Block, 1978; Coates and Thoreson, 1976; Fimian, 1979; Gann, 1979; and Styles and Cavanagh, 1977). Also, in a study of the frequency and strength of occurrence of a number of predispositional and environmental sources of stress in a random sample of full-time special education teachers, Fimian and Santoro (1981) found the following to be both the strongest and most frequent sources of stress: (a) inadequate salaries; (b) time limitations, (c) poor attitudes on the part of administration; (d) personal priorities that are shortchanged because of professional demands; and (e) a lack of recognition for extra work and good teaching that is done.

Related to the sources of stress are a number of observable manifestations. Emotional, behavioral, and physiological (or symptomatic) manifestations of

stress are the net result of sudden, prolonged, or unrelieved bouts with stress (Maslach and Jackson, 1979). Emotional manifestations often act as precursors for behavioral and physiological changes in teachers under stress. They can also act as indicators that something may be wrong with the way one deals with stress. Frustration, worry, and feeling anxious, depressed, unable to cope, and mentally exhausted are only a few examples of stress-induced emotional manifestations. Attitudinal changes such as resenting one's pupils, peers, or administration, are others.

Behavioral manifestations related to stress usually occur at or shortly after the time that emotional manifestations do, and usually before those of a physiological nature. Certain changes in the way in which the teacher under stress approaches, acts toward, or starts to cope with his or her job may occur if the stressful events or percepts last for some time: acting defensively, sleeping more than usual, dealing with students on an intellectual nonpersonal basis, and allowing one's social and professional performance to deteriorate.

If the stressful events, or if one's perception of the stressful events, are not eventually resolved or modified, any number of physiological manifestations may occur. Stomach acid, stomach cramps or pains, increased blood pressure, cold sweats, nausea, and rapid breathing are but a few of the symptoms of unrelieved stress.

It is generally assumed that special education teachers exhibit their own particular job-related manifestations of stress. Therefore it is reasonable to expect that, given a random sample of teachers, certain teachers

would report high-stress levels, others low-stress levels, and a majority moderate-stress levels. Is it reasonable to expect, however, that high-stress teachers would differ significantly from moderate- and low-stress teachers on a number of stress manifestation variables? Do certain stress manifestations occur more frequently or with greater strength than do others? And in which stress manifestation variables do high-stress teachers differ significantly from their moderate- and low-stress colleagues?

To answer these questions, it is necessary to: (a) identify and compare the strongest and most frequently occurring manifestations of stress in special education teachers, and (b) compare teachers who report high-stress levels with those who report low-stress and moderate-stress levels by determining what significant differences, if any, exist between the three teacher groups.

Method

Subjects. The sample for this study consisted of 365 full-time special education teachers, randomly selected from 67 towns in the state of Connecticut. Of the 365 respondents, 58 were identified as low-stress teachers, 250 as moderate-stress teachers, and 57 as high-stress teachers. For information regarding the characteristics of the sample and the distribution of scores which were used to define high-, medium-, and low-stress teacher groups, note Fimian (1981) and Fimian and Santoro (1981).

Variables. The dependent variables in question were the degree of intensity (How Strong?) and the degree of frequency (How Often?) of various reported sources, and emotional, behavioral, and physiological manifestations of stress in special education teachers, as measured by the Special Education Teacher Stress (SETS) Questionnaire. The Likert-type ratings for the strength and frequency dimensions are noted in Fimian and Santoro (1981) and in Footnotes c and d of Table 1. In this article, only data related to the

manifestations of occupational stress are reported.

Instrumentation. The 5-page SETS Questionnaire¹ is composed of six sections. Personal and professional questions compose Sections I and II; stress source items compose Section III; emotional and behavioral manifestation items compose Section IV; physiological manifestation items compose Section V; and an Optional Comments section composes Section VI.

Twenty-two (22) items related to Section IV and sixteen (16) items related to Section V represent the 38 manifestation variables in question in this report. Each teacher responded to each item twice -- once to show the frequency of feeling or occurrence of a phenomenon, and once to indicate the strength of the feeling or occurrence of a phenomenon (as suggested by Maslach and Jackson, 1979). All ratings were conducted using a 5-point (for strength) or 7-point (for frequency) Likert-type scale.

Additional information regarding the instrument can be found in Fimian and Santoro (1981). For data regarding the content validity, construct validity, and internal consistency reliability of the instrument, note Fimian (1981).

Procedure. During Spring, 1980, the SETS Questionnaire was developed and reproduced. Eight-hundred (800) questionnaires, with cover letters and stamped pre-addressed envelopes, were mailed during the first week in May; 365 were returned on or before July 1, or within ten days after the end of the 1979-1980 public school year. Therefore, each respondent filled out and returned his or her questionnaire during the last month of the 1979-1980 school year.

Results

A number of results were evident, and will be reported in terms of both relative and general frequencies and means and significant findings yielded from oneway analyses of variance.

Table 1 lists the twenty strongest and most frequently occurring emotional and behavioral manifestations of special education teacher stress. Very consistent reportings between the strength and frequency measures are evident, with eight of the ten strongest manifestation items also being the most frequent. Nine of the ten strongest manifestation items were emotional manifestations, while eight of the second ten items were behavioral manifestations. The following strongest-occurring emotional manifestations were also the five most frequently occurring: becoming frustrated, feeling mentally exhausted, worrying excessively, feeling pressured, and feeling depressed. Having a separation of one's job life from one's personal life, acting defensively with others, allowing one's social performance to deteriorate, sleeping more than usual, and allowing one's professional performance to deteriorate were the five strongest and most frequently occurring behavioral manifestations of stress.

Insert Table 1 about here

Table 2 lists the ten strongest physiological manifestations or symptoms of teacher stress reported by the 365 teachers. Of these, physical exhaustion, headaches, becoming fatigued in a very short time, physical weakness, and stomach cramps were reported as being the strongest symptoms of stress, with ratings falling between the mild-to-moderate strength range. Of the ten strongest stress symptoms, nine were also the most frequently occurring.

Insert Table 2 about here

Means and standard deviations of high-stress, medium-stress, and low-stress teachers' frequencies and strength scores were computed; differences between means and standard deviations for high-stress teachers (N=57), medium-stress

teachers (N=250) and low-stress teachers (N=58) were analyzed using oneway analyses of variance. One frequency score and one strength score per manifestation item were used in the statistical analyses, and a significance level of .05 selected. The results showed significant differences in both measures among the three teacher groups for each of the 38 stress manifestation variables, as noted in Table 3.

Insert Table 3 about here

With the exception of the groups' mean differences on the following variables, the frequency and strength measures of all other variables were significantly different with respect to each of the three teacher groups (F range = 7.5 to 81.0, $df = 2/362$, $p \leq .001$): (a) the frequency of stress manifestations attributed to dealing with students on a non-personal basis ($F = 16.7$, $df = 2/362$, $p \leq .001$), a separation of one's job life from personal life ($F = 7.7$, $df = 2/362$, $p \leq .001$), making excessive use of over-the-counter drugs ($F = 16.6$, $df = 2/362$, $p \leq .001$), prescription drugs ($F = 13.5$, $df = 2/362$, $p \leq .001$), and alcohol ($F = 7.5$, $df = 2/362$, $p \leq .001$), cold sweats ($F = 22.7$, $df = 2/362$, $p \leq .001$), and rapid breathing ($F = 42.7$, $df = 2/362$, $p \leq .001$); (b) the strength of stress manifestations attributed to making use of excessive alcohol ($F = 13.3$, $df = 2/362$, $p \leq .001$) and cold sweats ($F = 23.3$, $df = 2/362$, $p \leq .001$). In each of these variables, there were no significant differences between low-stress and moderate-stress group means, while there were significant differences between the high-stress and medium-stress, and high-stress and low-stress group means.

The following group differences were found to be consistent across all other variables: (a) low-stress group means were significantly smaller than those reported for medium-stress and high-stress groups; (b) medium-stress

means were significantly larger than low-stress means and significantly smaller than the high-stress group means; and (c) high-stress means were significantly larger than low- and medium-stress group means. The conservative Scheffé test was used to determine the means between which significant differences existed. It was found that low-stress teachers consistently scored significantly lower than the medium- and high-stress teachers, and that high-stress teachers consistently scored significantly higher than medium- and low-stress teachers with respect to the two measures for each of the 38 stress manifestation variables. Group frequency and strength means and standard deviations for each stress manifestation variable are reported in Table 4.

Insert Table 4 about here

Discussion

Results of the general frequencies and means per stress manifestation for the special education teachers surveyed indicate that many of these teachers exhibit frequent and strong manifestations of job-related stress. Becoming frustrated, mentally exhausted, excessively worried, and feeling pressured, depressed and anxious were the six strongest emotional manifestations reported. Having a near-total separation of one's job life from one's personal life, acting defensively with others, allowing one's social performance to deteriorate, sleeping more than usual, allowing one's professional performance to deteriorate, and dealing with one's students on only an intellectual non-personal basis were the six strongest behavioral manifestations of teacher stress. With the following exceptions, those manifestations rated the strongest were also rated as the most frequently occurring: becoming anxious, resenting members

of administration, becoming insecure, and resenting certain pupils. These last items were rated either as being far more frequent than strong or far less frequent than strong. As a group, all special education teachers rated the emotional and behavioral manifestations as being of mild to moderate strength, and as occurring from a few times a year to a few times a month. Generally, emotional manifestations were rated as being more strong and more frequent than were the behavioral manifestations. This gives credence to the popular assumption that job related stress first manifests itself in teachers' change of attitudes while change in behaviors occur shortly thereafter.

Physiological manifestations were also reported having mild to moderate strengths, with infrequent to moderately frequent occurrence. Physical exhaustion, headaches, becoming fatigued in a very short time, physical weakness, stomach acid, and feeling one's heart pounding or racing were the six strongest reported physiological manifestations of stress. These were also the six most frequent manifestations. Overall, there is a strong relationship between how many times a physiological manifestation occurs and the strength with which it occurs. The strongest physiological manifestations, therefore, were the most frequently occurring. Conversely, the weakest physiological manifestations were those that occurred infrequently.

Thus far, the teacher under stress has been studied only in light of his or her special education colleagues. The next questions address how highly stressed teachers, as a group, differ from a similar group of moderately or little stressed teachers with respect to the 38 stress manifestation variables. Does each group differ from the others, and if so, in what areas and to what degree are these differences evident? And, finally, in what ways are the groups significantly different from one another?

Significant F ratios between teacher groups were evident for all

manifestation variables. Oneway analyses of variance of the 38 stress manifestation items indicate that, with the aforementioned exceptions in which significant differences were not evident between low- and moderate-stress groups, teacher ratings on the stress manifestation variables across all three stress levels were quantitatively different to a significant degree. In the case of almost every variable listed in Tables 3 and 4, high-stress teachers exhibited significantly more frequent and significantly stronger emotional, behavioral, and physiological manifestations than did all other teachers, including those in the moderate-stress group. In short, not only did high-stress teachers report significantly larger strength and frequency means than did moderate-stress teachers with respect to the manifestations items, these same moderate-stress teachers reported significantly greater strength and frequency means than did low-stress teachers. This trend is very evident when comparing within-measure means across the three group conditions in Table 4.

In both general and absolute terms, for every stress-related manifestation that occurs a few times a year or less for low-stress teachers, the same manifestation is reported by medium-stress teachers to occur once to a few times a month, and by high-stress teachers to occur a few times a month to practically every day. Similarly, low-stress teachers reported these manifestations as being of very mild strength and barely noticeable. Medium-stress teachers reported the same events as having mild to medium strength and as being slightly to moderately noticeable. High-stress teachers, on the other hand, reported the stress manifestations as having moderate to major strength and as being moderately to very noticeable. Why these differences across groups for both frequency and strength measures exist is not particularly clear. Perhaps environmental stressors, and therefore stress manifestations, actually do occur with greater strength and frequency to high-stress teachers,

or perhaps this is what stressed teachers perceive as happening to themselves in their teaching environments. It has been noted elsewhere, for example, that various individuals can act differentially to stress, given the same strength and same frequency of environmental stressors (Fimian, 1980).

The data presented here regarding the outcome of teacher stress support a number of commonly-held concepts regarding occupational stress in teachers. First, there appears to be no one stress manifestation that takes precedence over others. Teacher stress, as defined in terms of stress manifestations, is a multivariate construct and phenomena. Second, certain teachers report the effects of stress as occurring significantly more frequent and as being significantly stronger than do other teachers. Conversely, other teachers report the effects of stress as occurring significantly less frequent and as being significantly less strong than do other teachers. This finding supports the hypothesis that stress and its effects can be differentially distributed among any group of teachers. Though no data exist as yet regarding the incidence of stress related phenomena in teachers, the prevalence data reported in this paper suggest that stress may not be as epidemic as some have claimed (Block, 1978; McGuire, 1979; Weiskopf, 1980).

Third and finally, a problem definitely does exist for a number of the teachers in this sample. For example, approximately 8% of the sample, or one out of every 12 teachers, reported having to seek professional counseling for reasons related to job-related stress; for every teacher reporting the development of positive attitudes towards teaching since the beginning of his or her career, one reported no change, and two reported becoming more negative; almost one of every two teachers reported their jobs as contributing much to very much stress to their lives (Fimian and Santoro, 1981). Finally, a close inspection of the strength and frequency with which each stress

manifestation is reported to occur, and a comparison of these means across low-, medium-, and high-stress teacher groups (as is done in Table 4), indicates the extent to which teachers under stress differ from other less-stressed teachers. Clearly, the time has come to avoid "teacher stress" and "teacher burnout" as being a bandwagon topic, and to address a number of the reasons for and end-results of job-related stress in special education teachers.

Footnotes

¹For a copy of the questionnaire, contact the senior author.

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Table 1
Special Education Teacher Stress Survey:
Emotional and Behavioral Manifestations of Stress Ratings (N=365)

Rank Strength ^a	Order Frequency	Item No.	Statement ^b	Strength		Frequency	
				Mean ^c	S.D.	Mean ^d	S.D.
1	2	2	Becoming frustrated.	3.1 ^e	1.4	3.9	1.9
2	1	8	Feeling mentally exhausted.	3.1 ^e	1.6	3.6 ⁱ	2.0
3	8	1	Worrying excessively	2.9	1.4	3.6 ⁱ	2.0
4	5	5	Feeling pressured.	2.8 ^f	1.5	3.5	2.0
5	3	6	Feeling depressed.	2.8 ^f	1.5	3.2 ^j	1.8
6	16	3	Becoming anxious.	2.7	1.4	3.4	1.9
7	6	16	Having a total or near-total separation of my "job life" from my "personal life".	2.6	1.7	3.2 ^j	2.3
8	14	14	Resenting certain members of administration.	2.5	1.6	3.0	2.0
9	9	9	Feeling vulnerable.	2.4	1.6	2.8 ^k	1.9
10	4	4	Becoming insecure.	2.3 ^g	1.5	2.3 ^k	1.9
11	10	10	Acting defensively with others.	2.3 ^g	1.4	2.7	1.6
12	13	7	Feeling unable to cope.	2.2	1.5	2.4	1.7
13	11	13	Resenting certain of my peers.	2.1 ^h	1.5	2.5 ^l	1.7
14	18	18	Allowing my social performance to deteriorate.	2.1 ^h	1.6	2.5 ^l	1.9
15	12	11	Sleeping more than usual.	2.1 ^h	1.5	2.5 ^l	1.8
16	7	12	Resenting certain of my pupils.	2.0	1.5	2.4	1.7
17	17	17	Allowing my professional performance to deteriorate.	1.8	1.4	2.0	1.6
18	15	15	Dealing with my students on only an intellectual, non-personal basis.	1.6	1.3	1.8	1.4
19	22	22	Making excessive use of alcohol.	1.2	1.2	1.4	1.2
20	19	19	Being absent excessively.	1.1	1.2	1.2	0.9

^aThese authors have arbitrarily chosen to order the questionnaire items in terms of their strength ratings.

^bStatements have been rank ordered strongest first, less-strong last. The two least-strong manifestations of stress have been omitted from this table for purposes of brevity.

^cStrength means were computed based on the 5-point Likert-type scale used on the questionnaire: 1 = of very mild strength/barely noticeable; 3 = of medium strength/moderately noticeable; 5 = of major strength/very noticeable.

^dFrequency means were derived from the 7-point Likert-type scale used on the questionnaire: 1 = never; 2 = a few times a year; 3 = once a month; 4 = a few times a month; 5 = once a week; 6 = a few times a week; 7 = every day.

^{e-l}Means between/among these item ratings are approximate due to rounding. Actual rank ordering of means was done to the thousandths-place for each mean. The rank orders shown for both strength and frequency, therefore represent the true order based on subjects' responses.

Table 2
Special Education Teacher Stress Survey:
Physiological Manifestations of Stress Ratings (N=365)

Rank Order			Statement ^b	Strength		Frequency	
Strength ^a	Frequency	No.		Mean ^c	S.D.	Mean ^d	S.D.
1	1	9	Physical exhaustion	3.0	1.5	3.4	1.9
2	2	6	Headaches (regular & migraine)	2.5	1.5	2.8	1.8
3	3	14	Becoming fatigued in a very short time	2.3	1.5	2.6	1.8
4	4	11	Physical weakness	2.1	1.4	2.3 ^f	1.7
5	5	1	Stomach acid	2.0 ^e	1.4	2.3 ^f	1.7
6	6	4	Feeling my heart pounding/racing	2.0 ^e	1.4	2.2 ^g	1.6
7	7	15	Pains in back of spine	1.9	1.5	2.2 ^g	1.8
8	9	2	Stomach cramps	1.8	1.5	1.9 ^h	1.5
9	8	5	Feeling of increased blood pressure	1.7	1.4	1.9 ^h	1.6
10	10	10	Nausea	1.5	1.3	1.6	1.2

^aThese authors have arbitrarily chosen to order the questionnaire items in terms of their strength ratings.

^bStatements have been rank ordered strongest first, less strong last. The six least-strong symptoms of stress have been omitted from this table for purposes of brevity.

^cNote Footnote *c* of Table 1 for the 5-point Likert-type scale used to rate the strength of each symptom.

^dNote Footnote *d* of Table 1 for the 7-point Likert-type scale used to rate the frequency of each symptom.

^{e-h}Means between/among these item ratings are approximate due to rounding. Actual rank ordering of means was done to the thousandths-place for each mean. The rank orders shown for both strength and frequency, therefore, represent the true order based on subjects' responses.

Table 3
Analysis of Variance Summaries of Frequency and Strength
Measures for Low-stress (N=58), Medium-stress (N=250), and High-stress (N=57) Teacher Groups

Abbreviated Item Stem	Frequency				Strength			
	SS ^a	df ^a	MS ^a	F ^a	SS ^a	df ^a	MS ^a	F ^a
Emotional Manifestations of Stress								
1 Worrying excessively								
Between	364.9	2	182.4	64.5***	151.5	2	75.7	45.2***
Within	1023.7	362	2.8		607.3	362	1.7	
2 Becoming frustrated								
Between	341.6	2	170.8	71.4***	166.1	2	83.1	58.3***
Within	866.1	362	2.4		515.7	362	1.4	
3 Becoming anxious								
Between	353.3	2	176.7	71.6***	166.9	2	83.5	48.3***
Within	893.5	362	2.5		625.3	362	1.7	
4 Becoming insecure								
Between	370.7	2	185.4	76.0***	209.3	2	104.6	56.5***
Within	883.4	362	2.4		670.0	362	1.9	
5 Feeling pressured								
Between	346.9	2	173.4	56.2***	165.9	2	82.9	45.7***
Within	1116.2	362	3.1		656.8	362	1.8	
6 Feeling depressed								
Between	327.2	2	163.6	68.0***	183.5	2	91.7	42.4***
Within	871.5	362	2.4		783.6	362	2.2	
7 Feeling unable to cope								
Between	297.1	2	148.5	78.0***	237.9	2	118.9	69.6***
Within	689.3	362	1.9		618.9	362	1.7	
8 Feeling mentally exhausted								
Between	349.4	2	174.7	60.0***	212.3	2	106.2	61.1***
Within	1054.7	362	2.9		628.8	362	1.7	
9 Feeling vulnerable								
Between	383.4	2	191.7	81.0***	250.7	2	125.4	66.1***
Within	857.4	362	2.4		686.2	362	1.9	
Behavioral Manifestations of Stress								
10 Acting defensively								
Between	172.0	2	86.0	38.2***	121.8	2	60.9	35.3***
Within	814.3	362	2.2		625.8	362	1.7	
11 Sleeping more than is usual								
Between	135.8	2	67.9	22.7***	121.9	2	61.0	29.3***
Within	1083.0	362	3.0		754.0	362	2.0	
12 Resenting certain pupils								
Between	173.1	2	86.5	33.6***	112.2	2	56.1	30.2***
Within	932.6	362	2.6		672.1	362	1.9	
13 Resenting certain peers								
Between	130.9	2	65.5	24.9***	92.7	2	46.4	22.6***
Within	950.3	362	2.6		744.0	362	2.1	
14 Resenting members of administration								
Between	190.4	2	95.2	27.7***	120.2	2	60.1	26.0**
Within	1244.5	362	3.4		835.9	362	2.3	
15 Dealing with students on a non-personal basis								
Between	56.7	2	28.3	16.7***	65.1	2	32.6	22.1***
Within	612.6	362	1.7		532.6	362	1.5	

Table 3 (continued)

Abbreviated Item Stem	Frequency				Strength			
	<u>SS^a</u>	<u>df^a</u>	<u>MS^a</u>	<u>F^a</u>	<u>SS^a</u>	<u>df^a</u>	<u>MS^a</u>	<u>F^a</u>
16 Separation of one's job life from personal life								
Between	77.8	2	38.9	7.7***	59.3	2	29.6	11.3***
Within	1837.7	362	5.1		953.9	362	2.6	
17 Deteriorating professional experience								
Between	130.6	2	65.3	33.8***	86.0	2	43.0	24.7***
Within	698.7	362	1.9		630.0	362	1.7	
18 Deteriorating social performance								
Between	137.4	2	68.7	24.6***	108.8	2	54.4	28.0***
Within	1012.5	362	2.8		704.3	362	1.9	
19 Being excessively absent								
Between	23.2	2	11.6	19.6***	61.4	2	30.7	23.9***
Within	214.3	362	0.6		465.8	362	1.3	
20 Making excessive use of over-the-counter drugs								
Between	19.6	2	9.8	16.6***	30.2	2	15.1	16.5***
Within	214.4	362	0.6		332.5	362	0.9	
21 Making excessive use of prescription drugs								
Between	7.7	2	3.9	13.5***	27.7	2	13.8	17.0***
Within	103.9	362	0.3		294.8	362	0.8	
22 Making excessive use of alcohol								
Between	18.3	2	9.2	7.5***	38.6	2	19.3	13.3***
Within	443.8	362	1.2		525.8	362	1.5	
Physiological Manifestations of Stress								
23 Stomach acid								
Between	120.5	2	60.2	22.6***	102.4	2	51.2	27.6***
Within	965.0	362	2.7		672.5	362	1.9	
24 Stomach cramps								
Between	135.6	2	67.8	37.6***	109.9	2	55.0	29.3***
Within	651.9	362	1.8		680.7	362	1.9	
25 Stomach pains of extended duration								
Between	81.2	2	40.6	27.0***	99.7	2	49.9	29.1***
Within	545.6	362	1.5		620.7	362	1.7	
26 Heart pounding or racing								
Between	140.7	2	70.4	33.6***	77.1	2	38.5	19.6***
Within	758.8	362	2.1		711.3	362	2.0	
27 Increased blood pressure								
Between	99.7	2	49.8	22.7***	59.1	2	29.5	15.5***
Within	793.3	362	2.2		691.7	362	1.9	
28 Headaches								
Between	168.1	2	84.1	31.1***	99.8	2	49.9	24.0***
Within	977.2	362	2.7		753.0	362	2.1	
29 Loss of voice								
Between	16.2	2	8.1	10.7***	46.0	2	23.0	19.4***
Within	273.7	362	0.8		430.0	362	1.2	
30 Cold sweats								
Between	43.4	2	21.7	22.7***	56.1	2	28.0	23.3***
Within	345.7	362	1.0		436.4	362	1.2	

Table 3 (continued)

Abbreviated Item Stem	Frequency				Strength			
	<u>SS^a</u>	<u>df^a</u>	<u>MS^a</u>	<u>F^a</u>	<u>SS^a</u>	<u>df^a</u>	<u>MS^a</u>	<u>F^a</u>
31 Physical exhaustion								
Between	265.1	2	132.6	45.8***	196.2	2	98.1	52.4***
Within	1046.8	362	2.9		677.6	362	1.9	
32 Nausea								
Between	85.8	2	42.9	33.6***	85.6	2	42.8	30.9***
Within	462.0	362	1.3		501.2	362	1.4	
33 Physical weakness								
Between	148.7	2	74.4	30.9***	101.8	2	50.9	27.6***
Within	872.1	362	2.4		667.0	362	1.8	
34 Rapid breathing								
Between	90.3	2	45.1	42.7***	83.0	2	41.5	35.5***
Within	382.8	362	1.1		423.1	362	1.2	
35 Dizziness								
Between	75.1	2	37.5	31.4***	77.2	2	38.6	28.1***
Within	432.8	362	1.2		498.0	362	1.4	
36 Becoming fatigued in a very short time								
Between	251.8	2	125.9	49.6***	152.3	2	76.1	37.1***
Within	919.3	362	2.5		742.3	362	2.1	
37 Back pains								
Between	157.8	2	78.9	27.1***	103.1	2	51.6	25.3***
Within	1052.3	362	2.9		738.0	362	2.0	
38 Poor appetite								
Between	43.8	2	21.9	14.5***	39.9	2	19.9	13.5***
Within	545.0	362	1.5		536.4	362	1.5	

^aAll values are rounded to the nearest tenth.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table 4
Means and Standard Deviations of Frequency and Strength of
Stress Manifestation Variable Occurrence as Reported by Teachers
in Low-stress (N=58), Medium-stress (N=250), and High-stress (N=57) Groups

Statement Number ^a	Frequency						Strength					
	Low-stress Teacher Group		Medium-stress Teacher Group		High-stress Teacher Group		Low-stress Teacher Group		Medium-stress Teacher Group		High-stress Teacher Group	
	$\bar{X}^b$	SD ^b	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Emotional Manifestations of Stress												
1	2.0	1.2	3.7	1.8	5.6	1.5	1.8	1.4	3.0	1.3	4.1	1.0
2	2.4	1.2	4.2	1.7	5.8	1.0	2.0	1.2	3.2	1.3	4.4	0.8
3	2.1	1.2	3.5	1.7	5.5	1.5	2.7	1.5	3.7	1.3	5.0	1.1
4	1.4	1.0	2.6	1.6	4.9	1.6	2.2	1.2	3.3	1.4	4.8	1.1
5	1.9	1.3	3.7	1.9	5.4	1.5	1.7	1.3	2.7	1.4	4.1	1.0
6	1.6	1.0	3.1	1.7	5.0	1.5	2.4	1.4	3.8	1.5	4.9	1.3
7	1.2	0.7	2.3	1.4	4.3	1.8	2.0	1.0	3.2	1.4	4.8	1.2
8	2.0	1.3	3.9	1.8	5.5	1.6	1.8	1.4	3.3	1.4	4.5	0.8
9	1.4	0.9	2.6	1.6	4.9	1.7	2.1	1.2	3.2	1.5	5.0	1.1
Behavioral Manifestations of Stress												
10	1.8	1.2	2.7	1.5	4.2	1.8	1.5	1.3	2.3	1.3	3.5	1.3
11	1.3	0.8	2.6	1.8	3.4	2.1	1.0	1.0	2.1	1.5	3.1	1.6
12	1.4	1.0	2.5	1.6	3.9	2.0	1.2	1.1	2.1	1.4	3.2	1.6
13	1.7	1.3	2.6	1.6	3.8	1.9	1.3	1.2	2.3	1.5	3.1	1.5
14	2.0	1.5	3.1	1.9	4.5	2.0	1.5	1.4	2.6	1.6	3.6	1.4
15	1.3 ^c	1.0	1.7 ^c	1.2	2.6	1.7	1.0	0.9	1.5	1.2	2.5	1.5
16	2.5 ^c	2.1	3.3 ^c	2.3	4.2	2.3	1.9	1.6	2.6	1.6	3.3	1.6
17	1.4	1.0	2.1	1.3	3.5	1.9	1.2	1.1	2.0	1.4	2.9	1.3
18	1.6	1.1	2.7	1.7	3.8	2.0	1.4	1.2	2.3	1.4	3.4	1.5
19	0.9	0.5	1.3	0.7	1.8	1.1	1.7	0.8	2.3	1.1	3.1	1.4
20	0.9 ^c	0.4	1.1 ^c	0.6	1.7	1.4	1.7	0.7	2.1	0.9	2.7	1.3
21	0.9 ^c	0.4	1.0 ^c	0.3	1.4	1.1	1.7	0.7	2.1	0.8	2.7	1.3
22	1.2 ^c	0.9	1.4 ^c	1.0	1.9	1.6	0.9 ^d	0.9	1.3 ^d	1.2	2.0	1.5
Physiological Manifestations of Stress												
23	1.4	1.0	2.3	1.7	3.4	2.0	2.2	1.1	3.0	1.4	4.0	1.5
24	1.1	0.7	1.8	1.3	3.2	1.9	2.0	1.1	2.7	1.3	3.9	1.7
25	0.9	0.6	1.4	1.2	2.5	1.8	1.8	1.1	2.5	1.3	3.6	1.7
26	1.5	1.1	2.1	1.4	3.6	1.9	2.3	1.3	2.9	1.4	3.9	1.5
27	1.3	1.1	1.8	1.4	3.1	2.1	2.1	1.3	2.7	1.3	3.5	1.6
28	1.7	1.3	2.7	1.7	4.1	1.8	1.7	1.3	2.5	1.5	3.5	1.4
29	0.9	0.5	1.4 ^e	0.9	1.6 ^e	1.1	0.8	0.6	1.3	1.1	2.0	1.5
30	0.9 ^c	0.5	1.3 ^c	0.9	2.1	1.6	0.8 ^d	0.6	1.2 ^d	1.1	2.2	1.5
31	1.8	1.4	3.5	1.8	4.8	1.6	2.5	1.3	4.1	1.4	5.0	1.2
32	0.9	0.5	1.5	1.1	2.6	1.7	0.9	0.8	1.4	1.2	2.6	1.5
33	1.3	0.9	2.3	1.6	3.6	1.8	2.2	1.2	3.1	1.4	4.1	1.4

Table 4 (continued)

Statement Number	Frequency						Strength					
	Low-stress Teacher Group		Medium-stress Teacher Group		High-stress Teacher Group		Low-stress Teacher Group		Medium-stress Teacher Group		High-stress Teacher Group	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
34	1.0 ^c	0.6	1.3 ^c	0.9	2.6	1.8	1.9	0.9	2.3	1.0	3.5	1.6
35	1.1	0.8	2.6	1.6	1.5	1.0	0.9	0.7	1.4	1.2	2.5	1.5
36	1.4	1.0	2.5	1.6	4.3	1.8	2.2	1.3	3.3	1.5	4.5	1.5
37	1.2	0.8	2.1	1.7	3.5	2.0	1.0	0.8	1.8	1.5	2.9	1.7
38	1.0	0.6	1.5	1.2	2.2	1.8	1.0	0.8	1.4	1.2	2.1	1.6

^aFor the items related to each of these variable numbers, note Table 3.

^bValues for all group means and standard deviations are rounded to the nearest tenth.

^cThese values represent a non-significant difference between low-stress and medium stress group frequency means. All other differences are significant to the $p = .001$ level.

^dThese values represent a non-significant difference between low-stress and medium-stress group strength means. All other differences were significant to the $p = .001$ level unless otherwise noted.

^eThese values represent the only non-significant difference between medium-stress and high-stress group means. All other differences were significant to the $p = .001$ level unless otherwise noted.